

# Radiation Sensor

## Abstract

A radiation sensor utilizing a single crystal semiconductor pyro-optical film to modulate a photonic carrier beam with energy in excess of the bandgap of the semiconductor for the purpose of detecting a first source of radiation. Specific implementations described here include a thin film of single crystal semiconductor made part of a suspended microplatform thermally isolated above an underlying substrate. The first source of low level radiation incident upon the microplatform and partially absorbed therein causes an incremental heating of the pyro-optical film. A second source of radiation comprised of a photonic carrier beam is incident on said microplatform and exits by reflectivity means or transmission means and is modulated by the pyro-optical effect with incremental heating of the platform and film. A detector or array of detectors monitors the intensity of the photonic carrier beam exiting the microplatform and thereby provides a sensitive means of monitoring the amplitude of the low level radiation.